Digitalization of Asset Information Management

Alexander Worp

Schiphol

INTRODUCTION

Alexander Worp

Strategic Advisor BIM at Asset Management Schiphol (till May 1st).

Worked for 6 years on implementing Building Information Management at Schiphol.

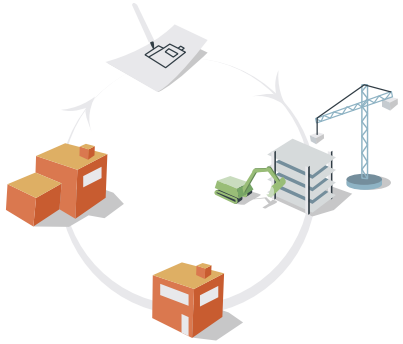
Vice Chairman of the board of buildingSMART Benelux since June 2017.

Started the user group ‘Airport Room’ in 2016 as part of BuildingSMART int.

After May 1st I continue as an independent advisor on Digitization of Asset Information

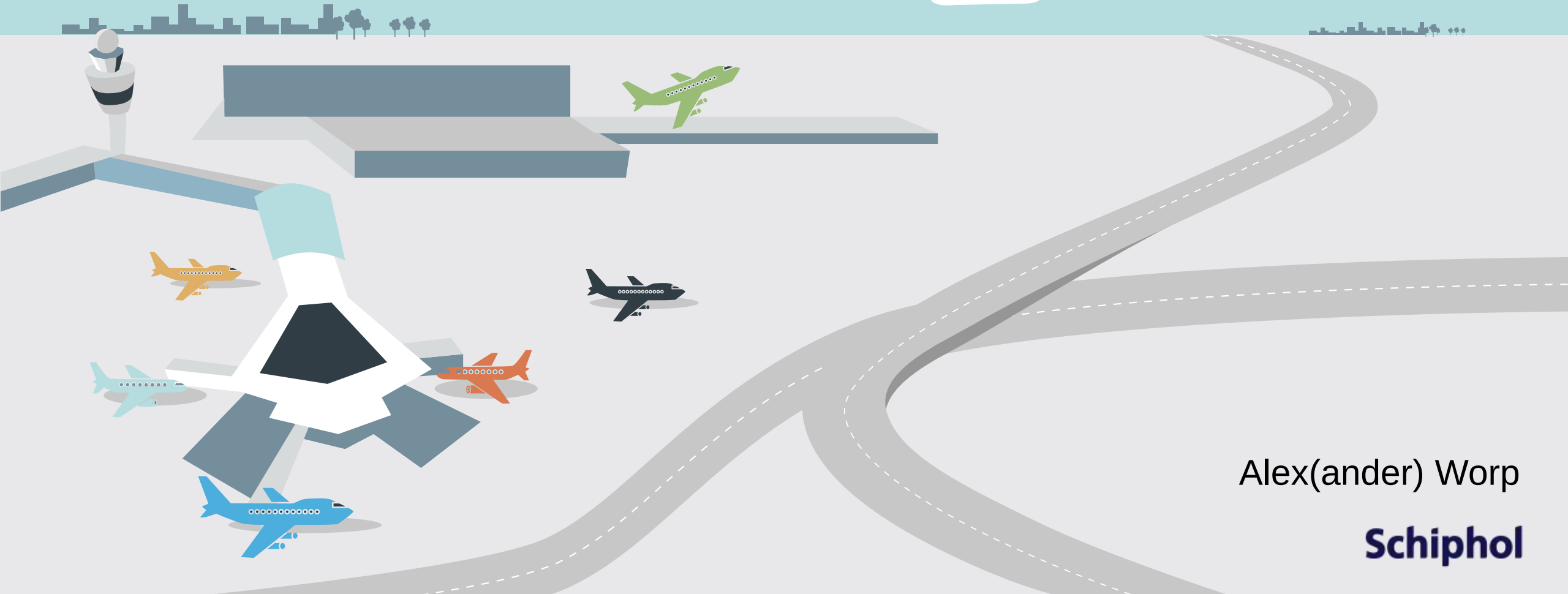
BIMćAlex@icloud.com

More successful asset management is only possible through collaboration with all stakeholders throughout the entire lifecycle.
By exchanging structured open data that can be validated and verified.



The Digitalization of Asset Information Management

For Clients / Asset Owners



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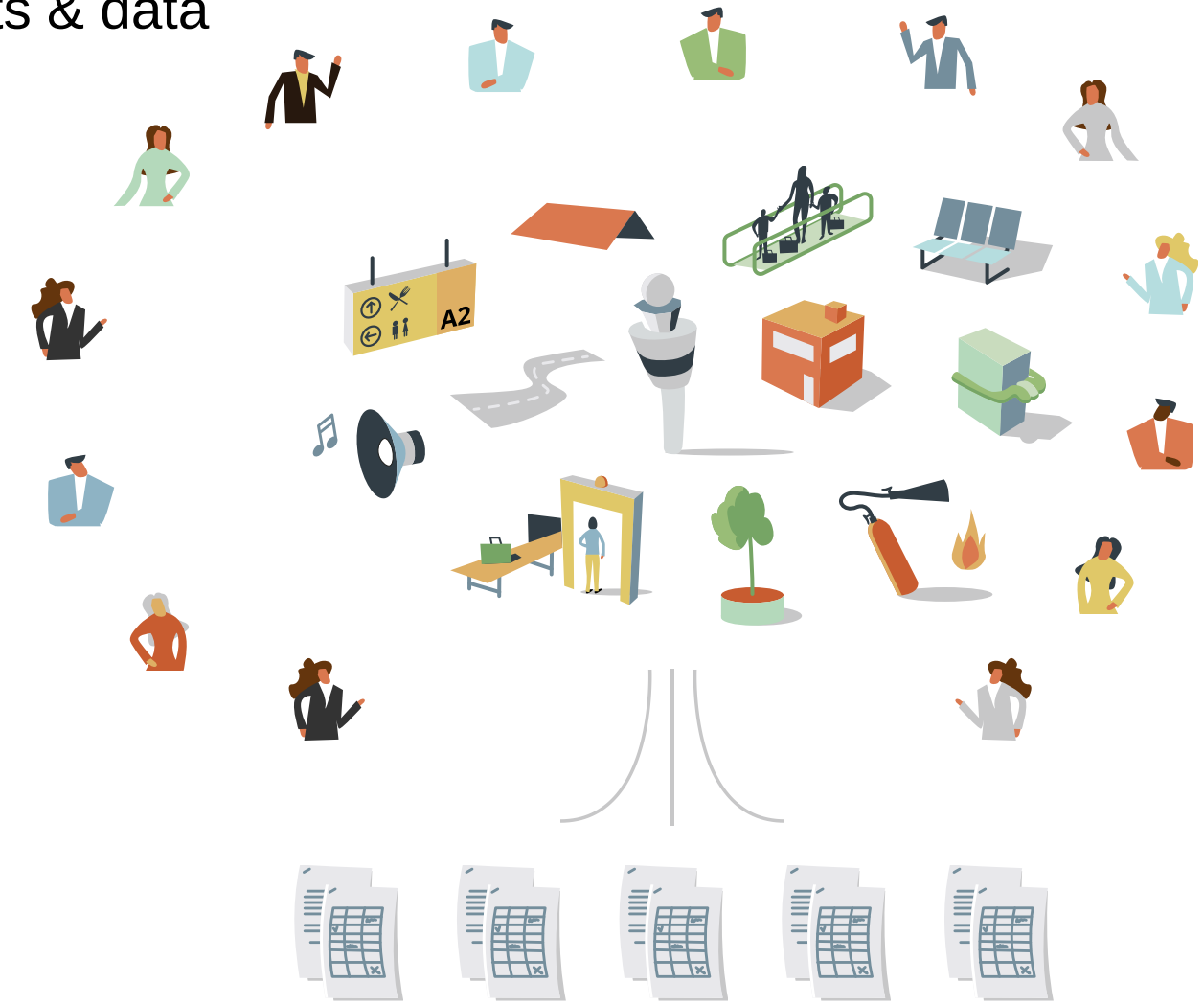
INTRODUCTION

Can Clients make better decisions during the lifecycle of their assets?

THE CHALLENGE WITH ASSETS AS CLIENTS

Many players, assets & data



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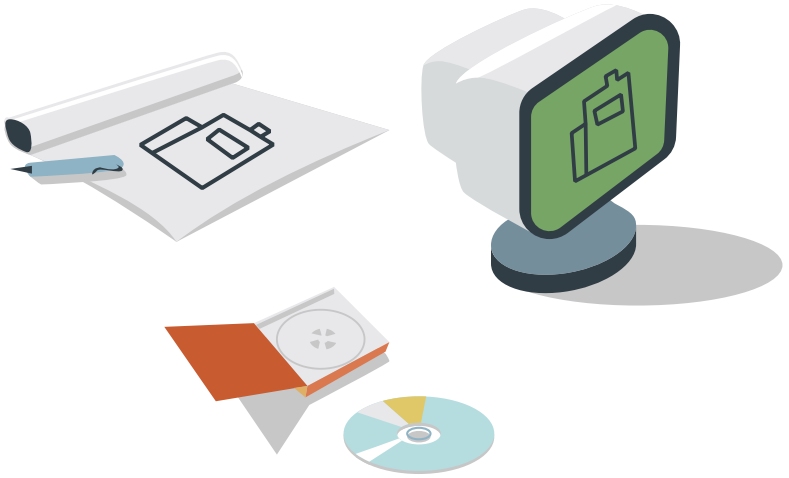
THE OPPORTUNITY

New technology opens opportunities for improvement



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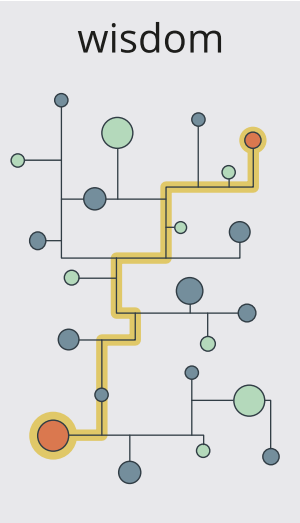
THE OPPORTUNITY

Information structure has to improve

With an improved Information structure



We can make **better decisions** and **optimize** the performance of your assets

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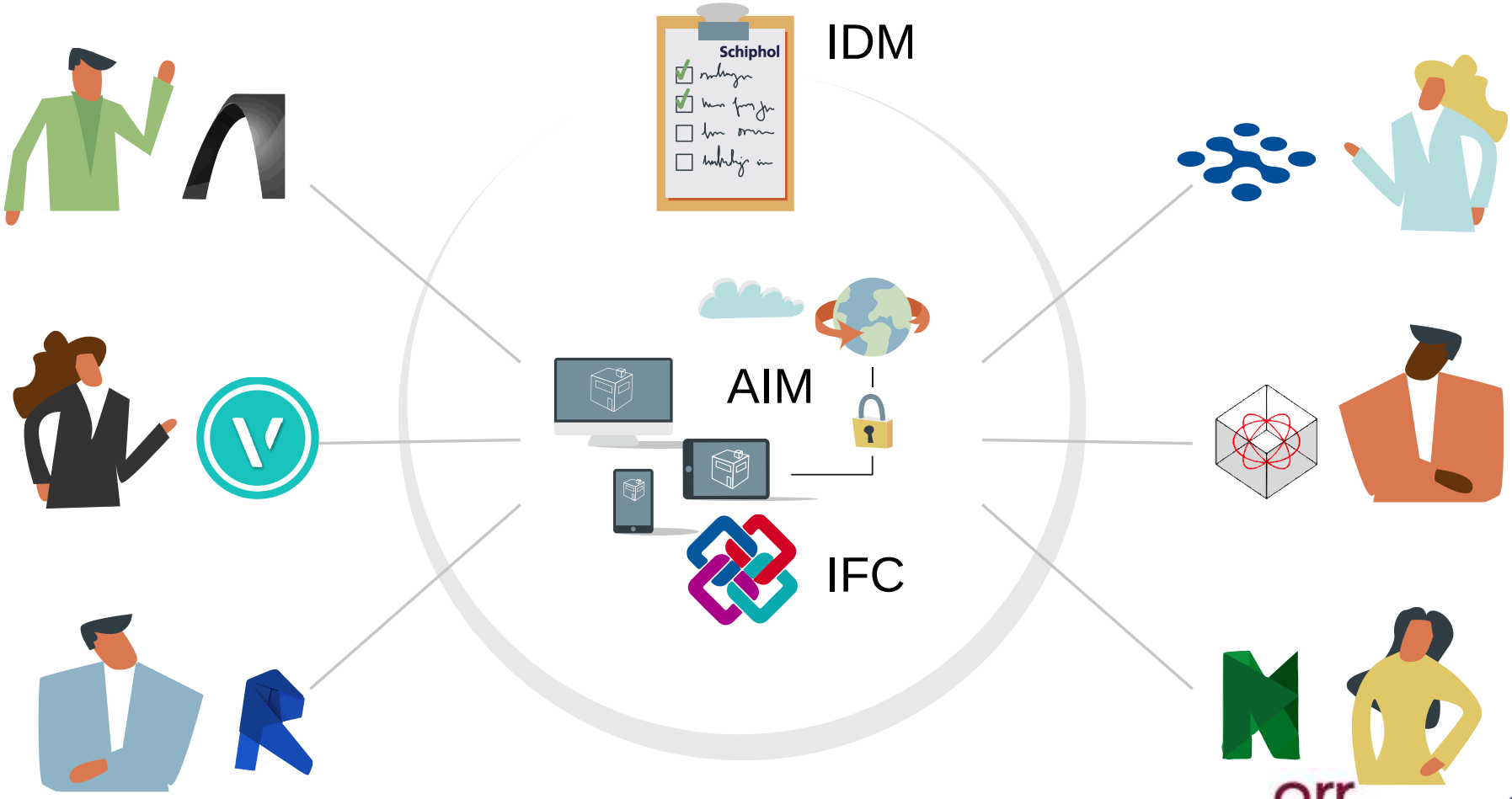
THE OPPORTUNITY



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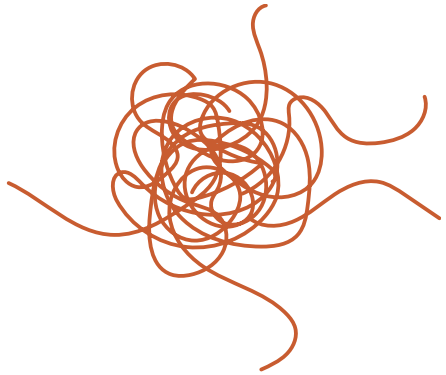
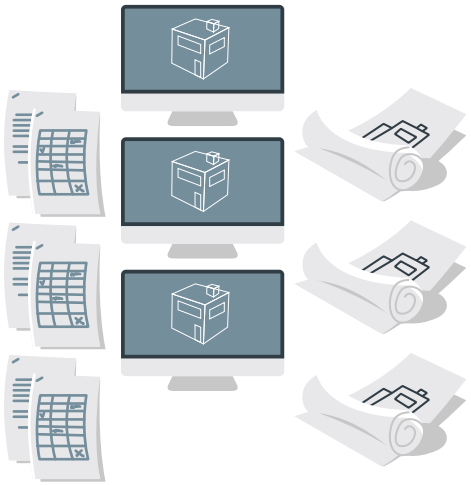
VISION: Clients need to go FROM….

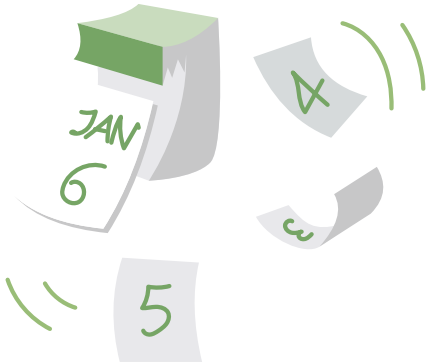
Being a dominant party that opens up their own systems to partners, suppliers and for consumptions. A closed collaboration…



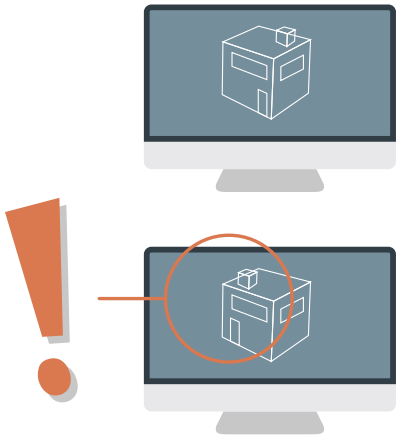
complex



redundant



time consuming



error-sensitive

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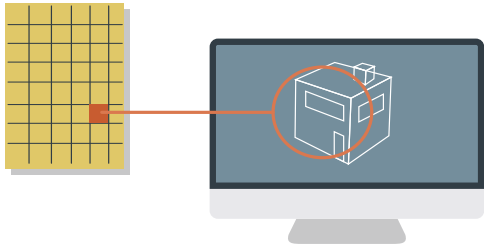
TO…

A collaborative digital system where multiple parties work together and share there information with common standards, processes and roles.

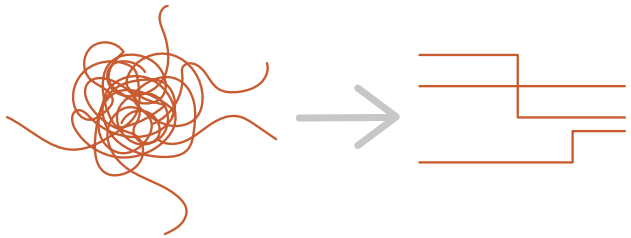
shared data

more knowledge

predictable maintenance



improved efficiency



cost reduction

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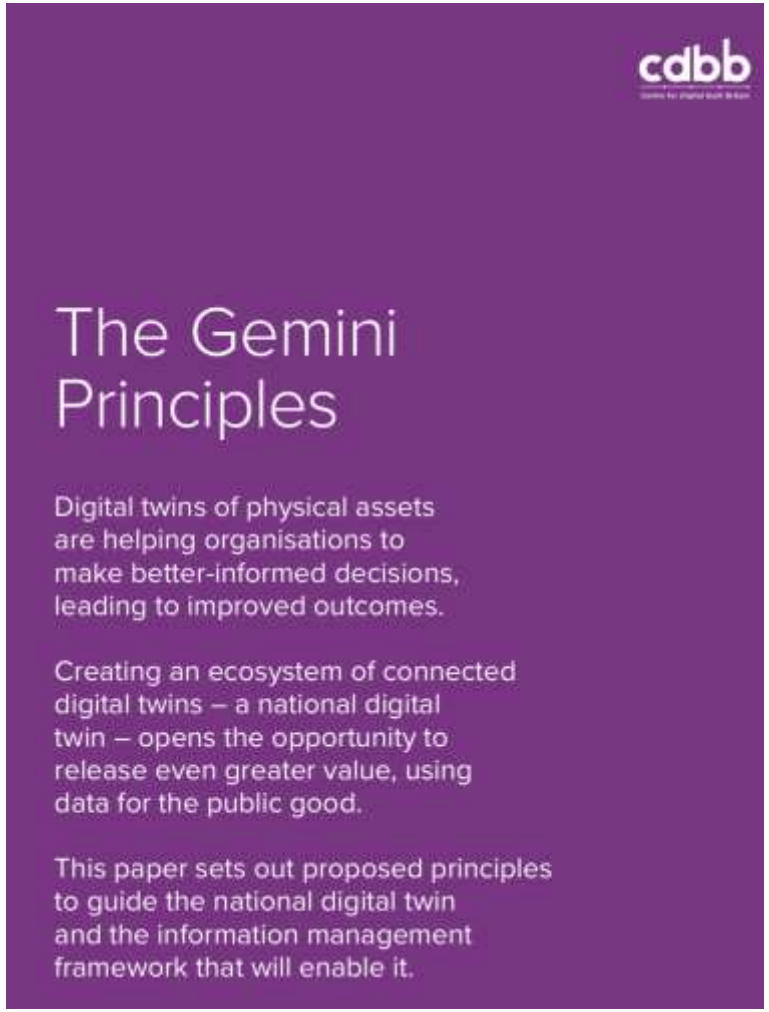
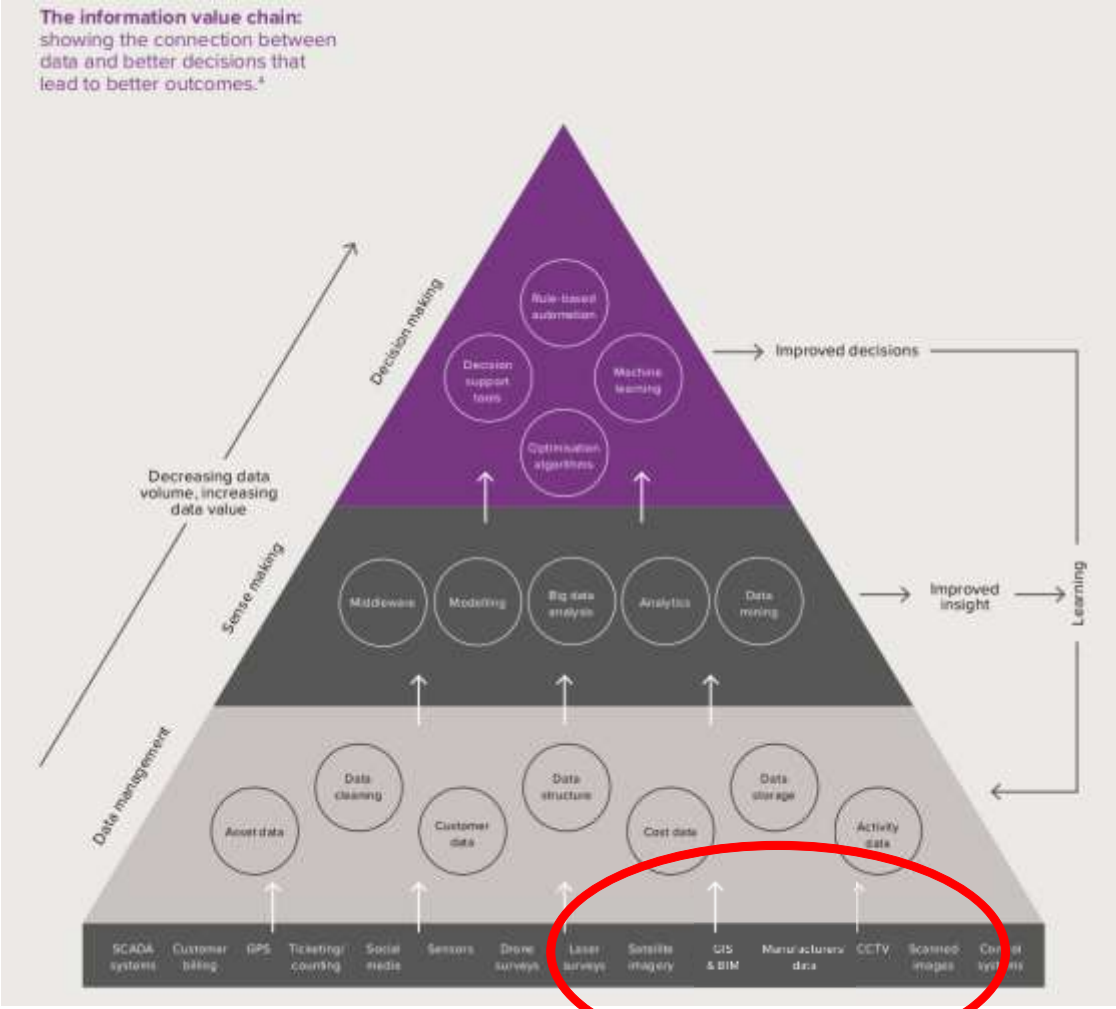
Then to a Digital Twin





https://www.cdbb.cam.ac.uk/Resources/ResoucePublications/TheGeminiPrinciples.pdf

The Digital Twin Principles

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THE OPPORTUNITY

Trace your Assets during the whole life cycle by the GS1 open standard

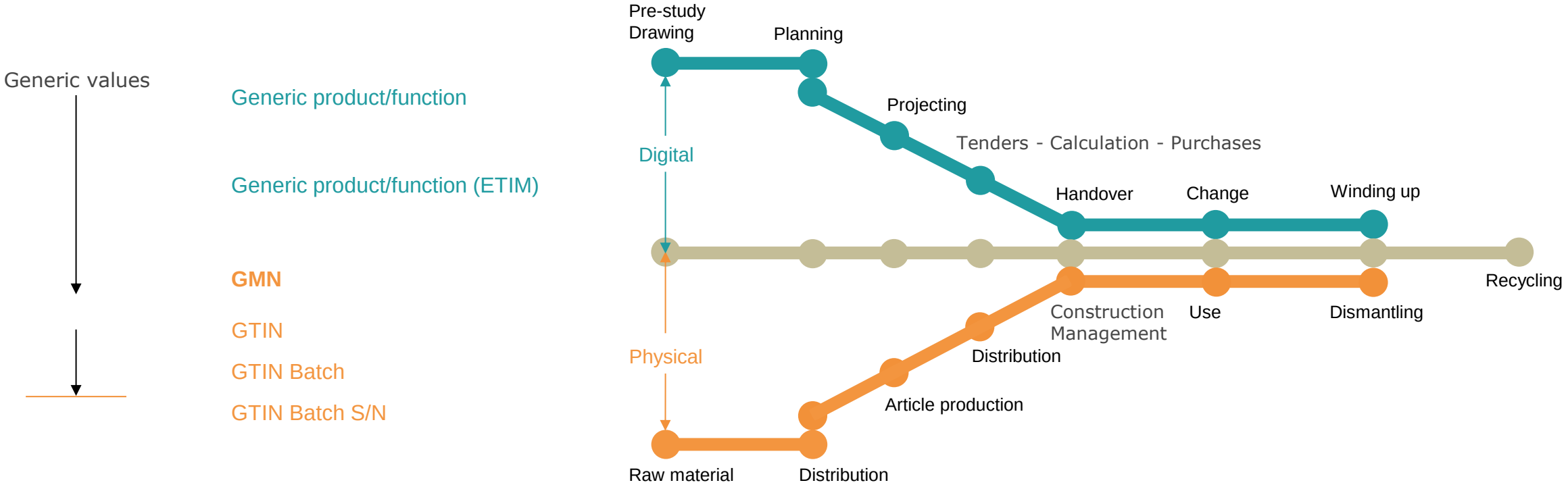
buildingSMART and GS1 signed a Memorandum of Understanding to advance global standards in the construction sector

New Standard: Global Model Number (GMN)

For more information contact:
Enzo Blonk: enzoblonk@gs1.org
Aidan Mercer: aidan.mercer@buildingsmart.org

THE OPPORTUNITY

GMN in the whole Asset life cycle



https://www.youtube.com/watch?v=pcj7Pso0sNs

Use cases

BIM is very simple, but the most difficult thing is simple BIM

Playing football is very simple, but the hardest thing there is is simple football. Johan Cruyff

Coming together is a **beginning**
Keeping together is **progress**;
Working together is **SUCCESS**
Henry Ford

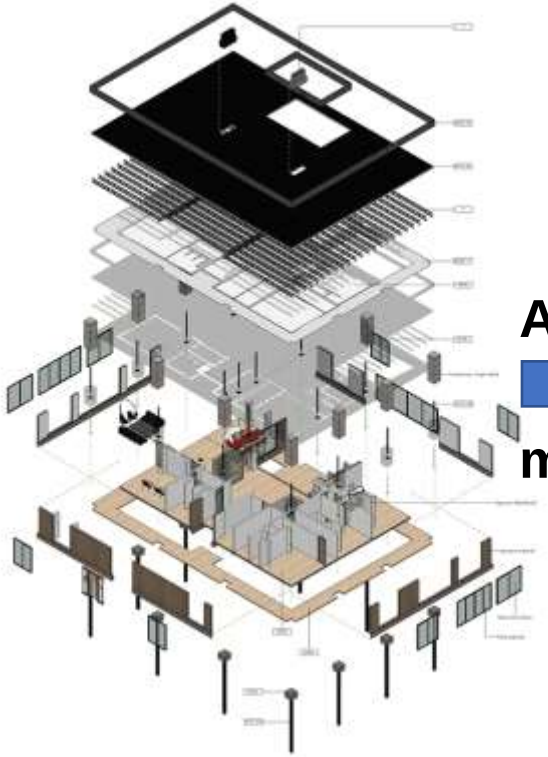
Schiphol

Validation

Schiphol

IFCxml messages into GIS

IFC in Operational Phase



After

maintenance

IFC 4.2 XML message
Containing;
- 1 Asset
- UUID (??GS1??)
- Attribute data of that asset
- Geometry of that asset

Revision type;
Create, Update Delete asset

And/or

XML containing asset documents

Realtime Data

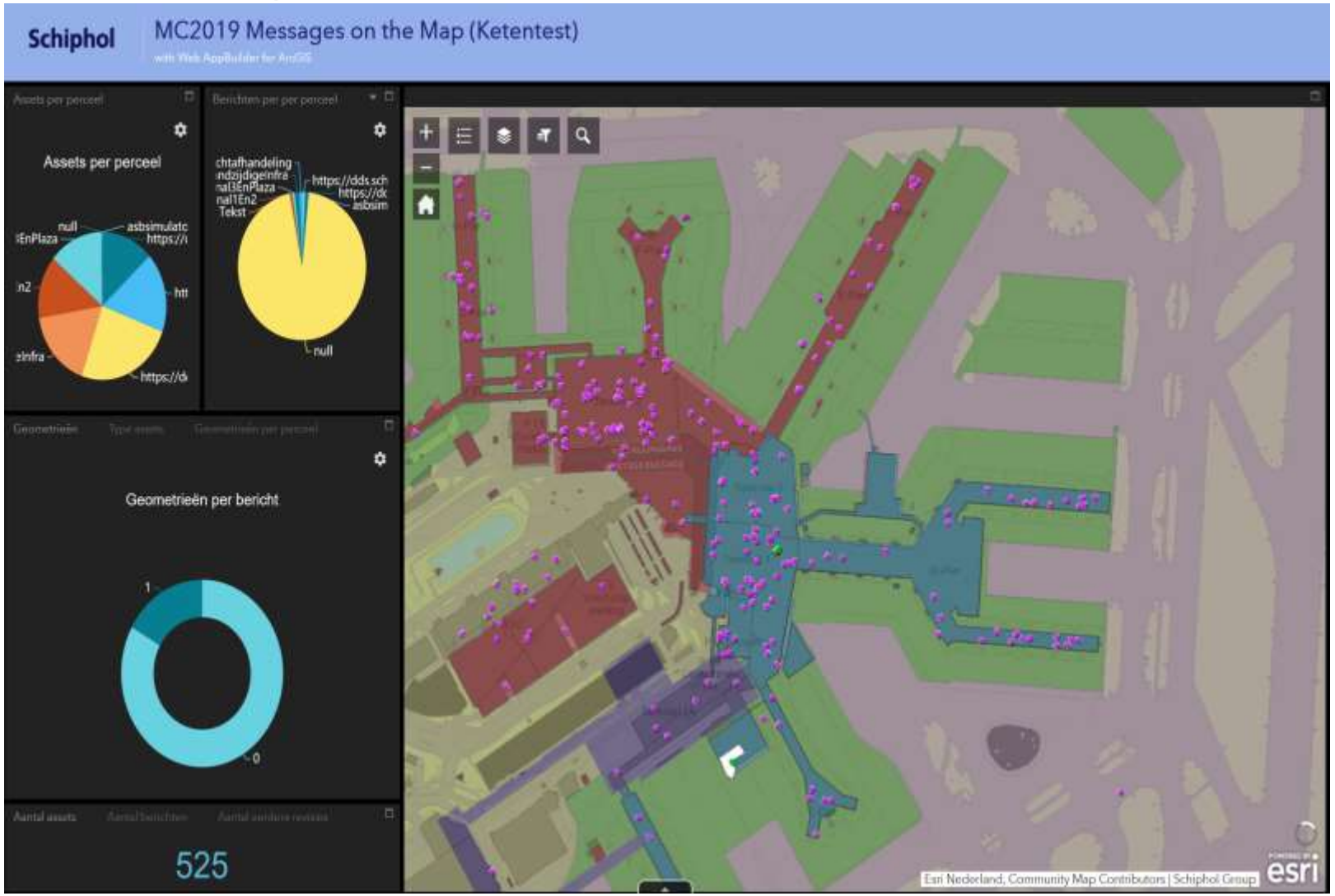
Processed in;

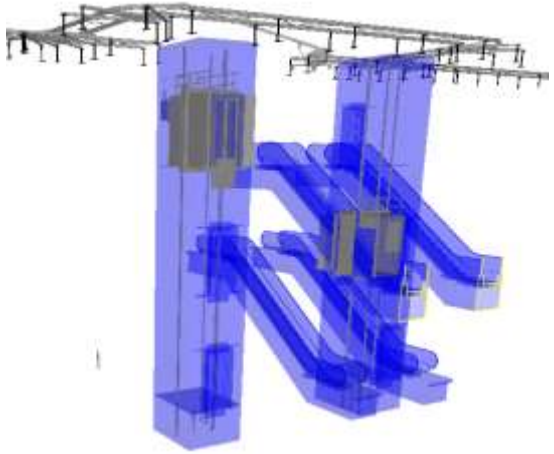
CDE
Maximo
EDMS

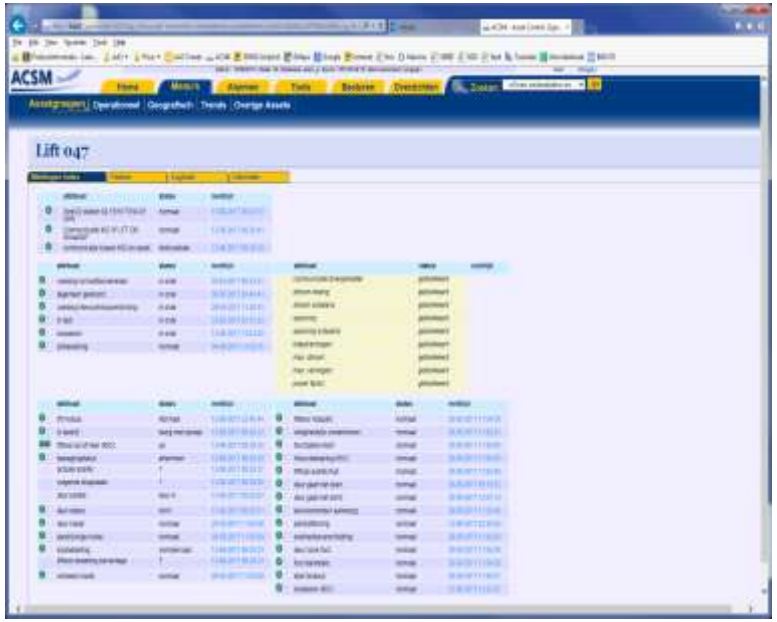
Up to date
GIS

Work done by Maya Tryfona for the Airport Room

Message Dashboard





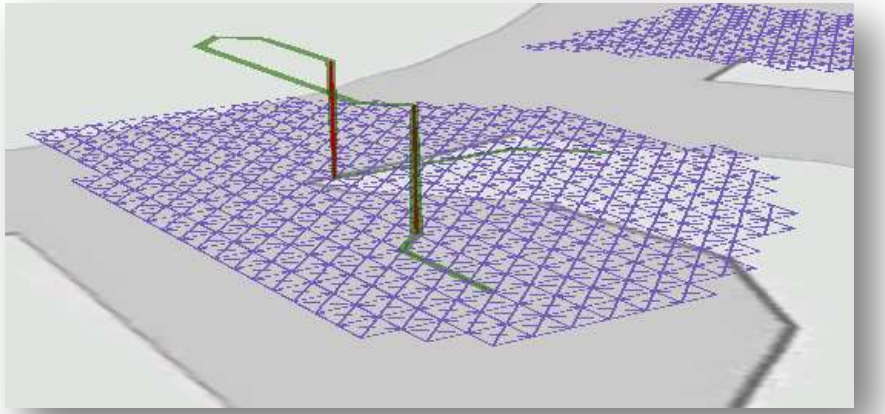


WAYFINDING

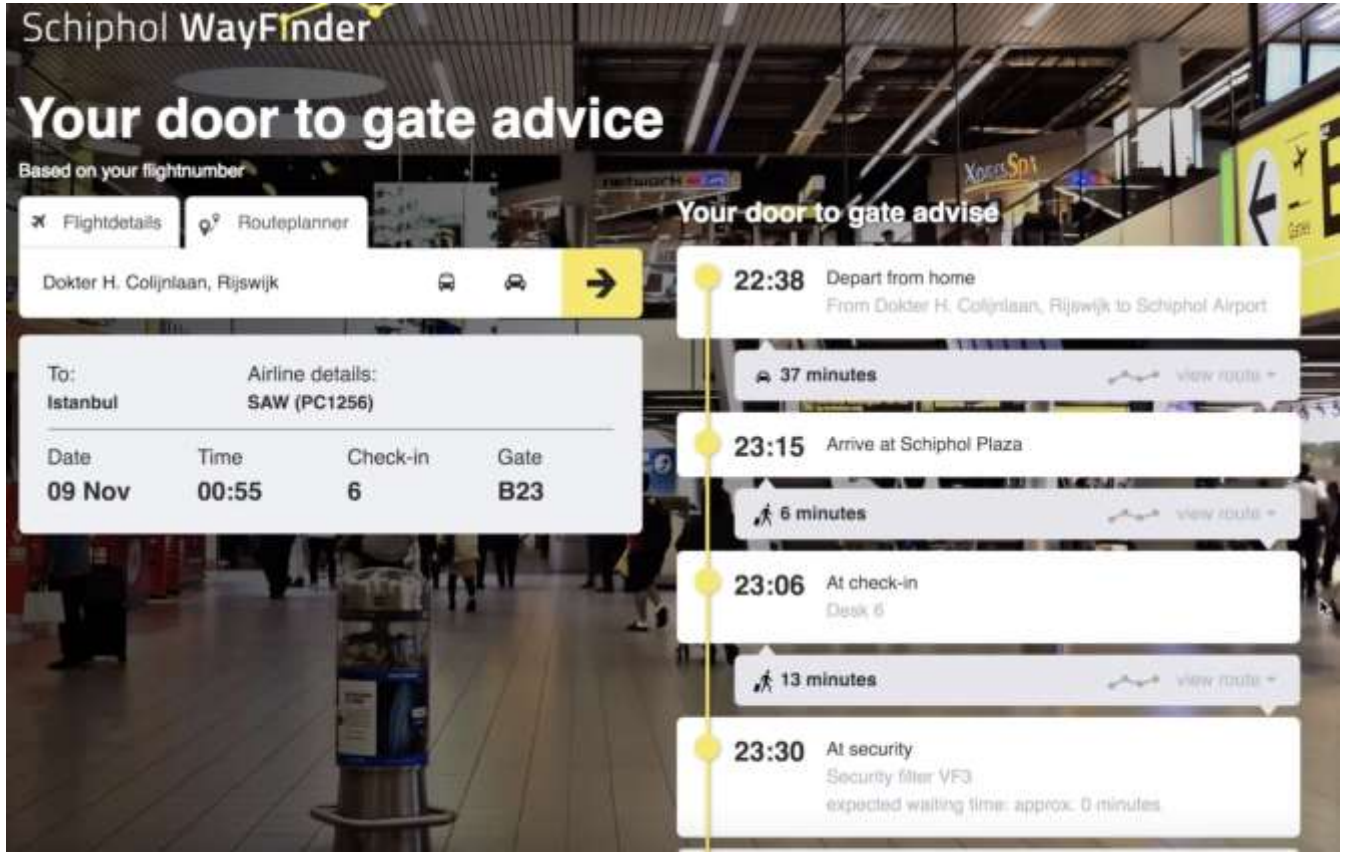
Goal: **Dynamic route calculation for Schiphol travelers**

Data Sources:

- **3D model**
- **Online status of the assets**
- **Floorplans**

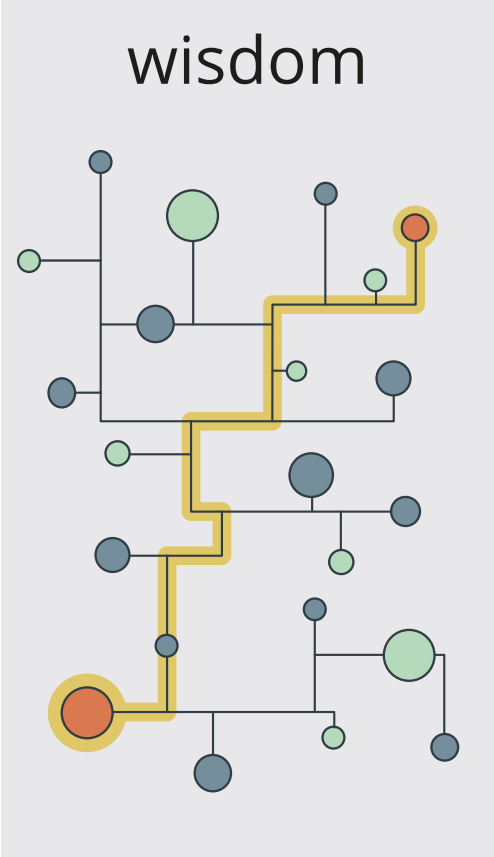


3D component out of IFC



THE OPPORTUNITY

With uniform, consistent structured and **validated ‘linked’ data** clients/asset owners can make **better decisions** and **optimize the performance** of their assets



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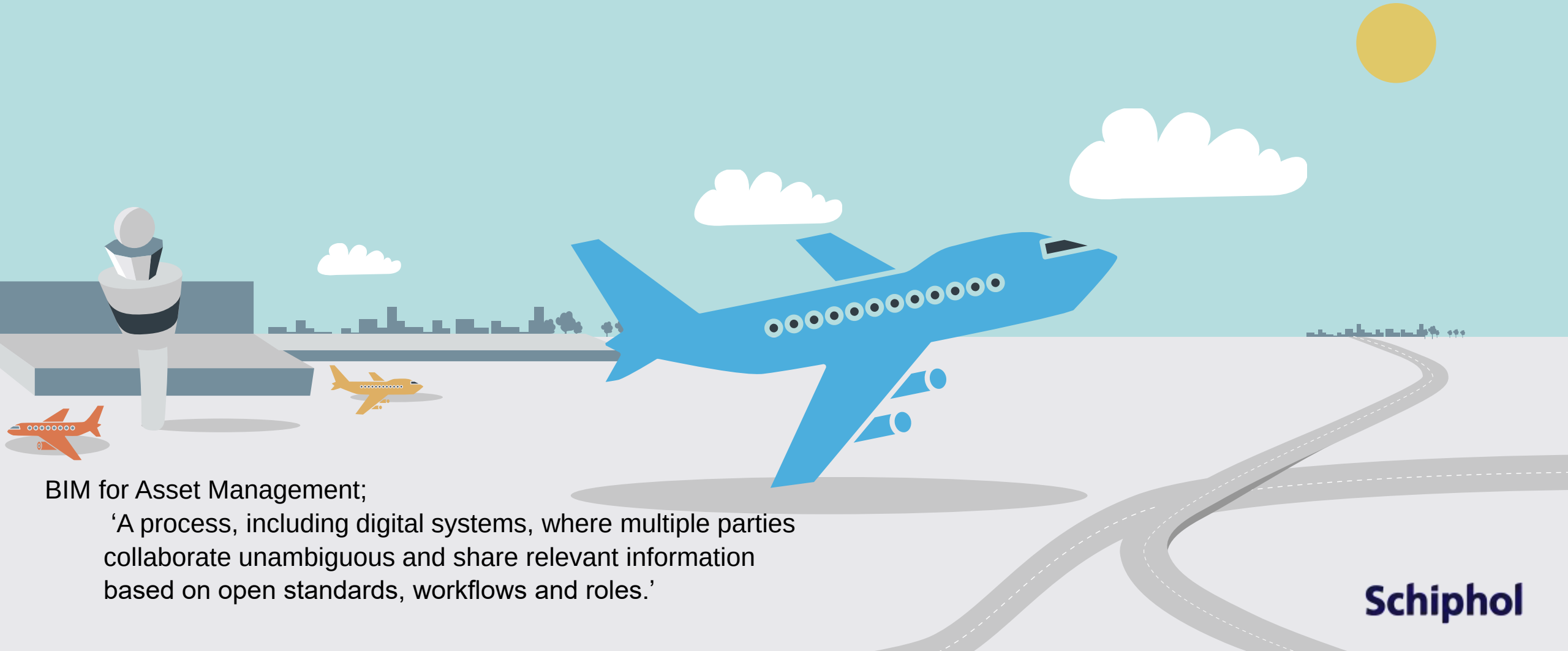
WILL YOU JOIN ?

BIM is very simple, but the most difficult thing is simple BIM



BIM for Asset Management;

‘A process, including digital systems, where multiple parties collaborate unambiguous and share relevant information based on open standards, workflows and roles.’

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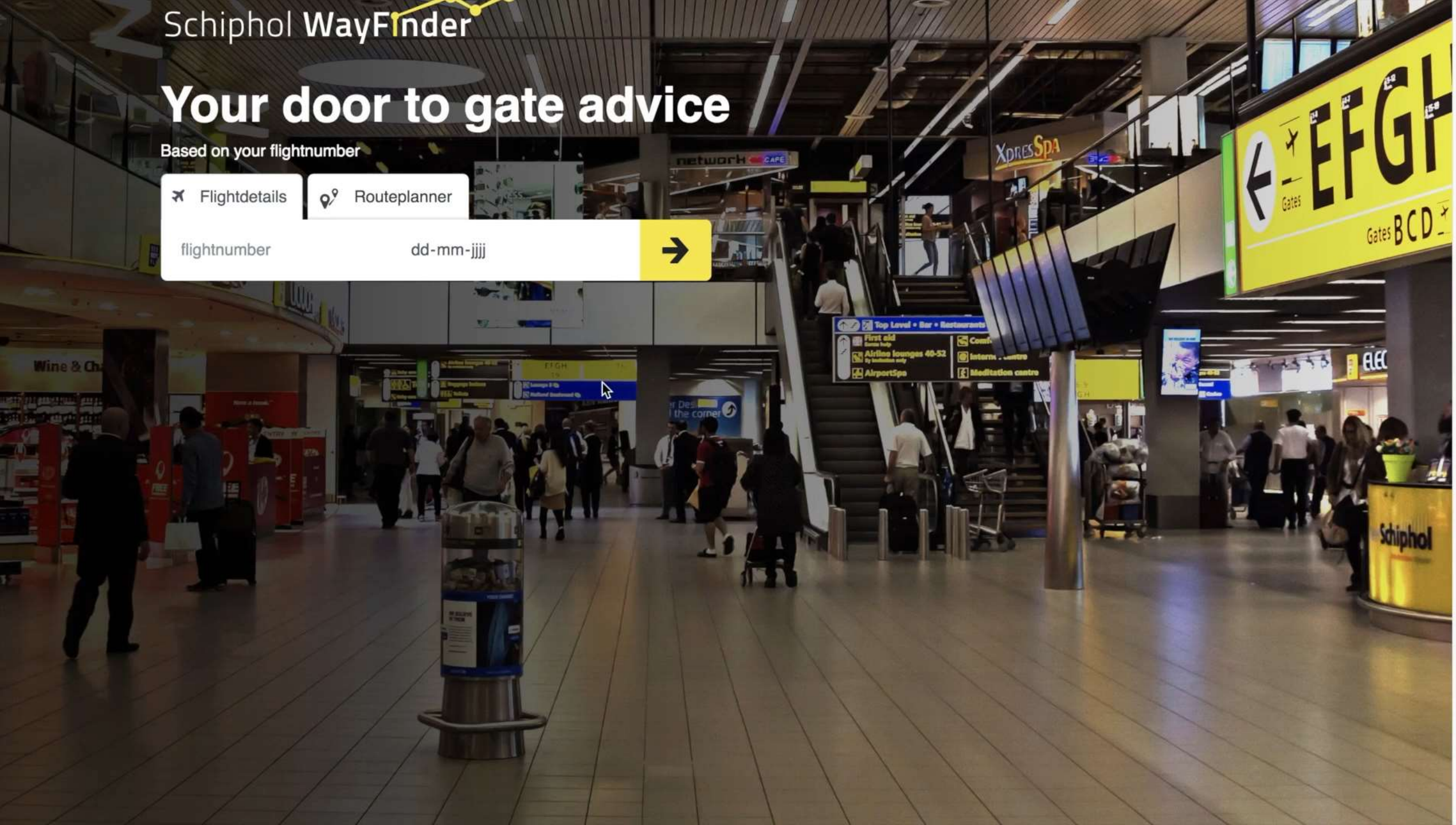
Schiphol WayFinder

Your door to gate advice

Based on your flightnumber

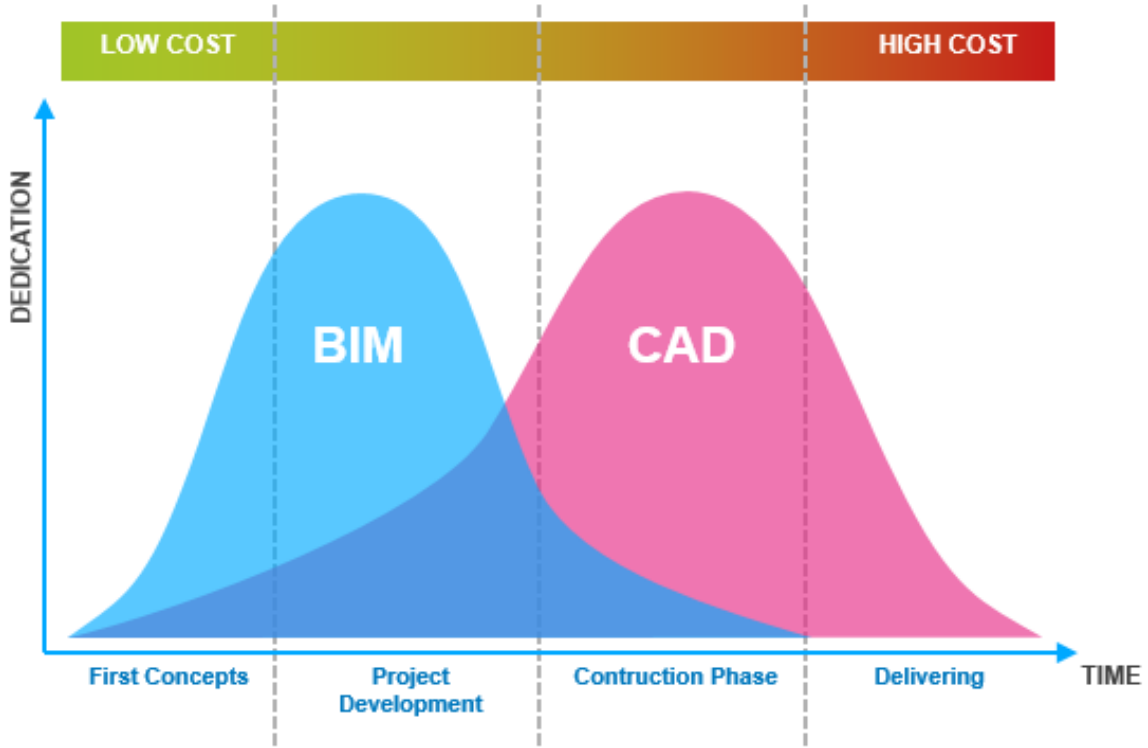
Flightdetails | Routeplanner

flightnumber | dd-mm-jjjj

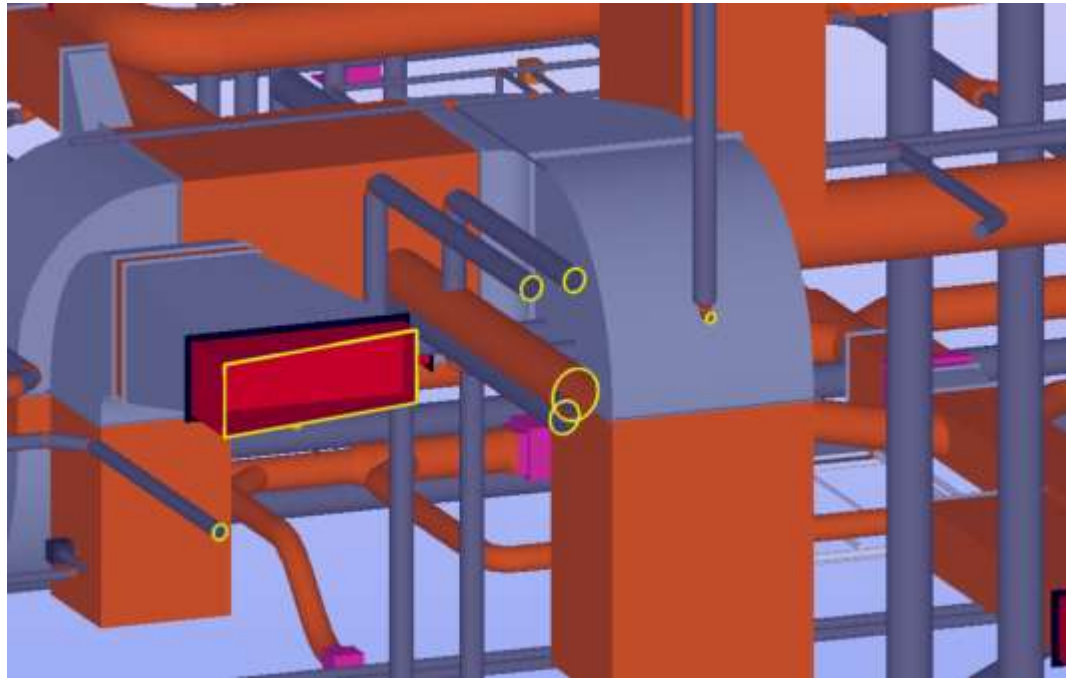


Design Costs vs Realization Costs

Shift in Design Costs



2D revision information transformed to 3D model



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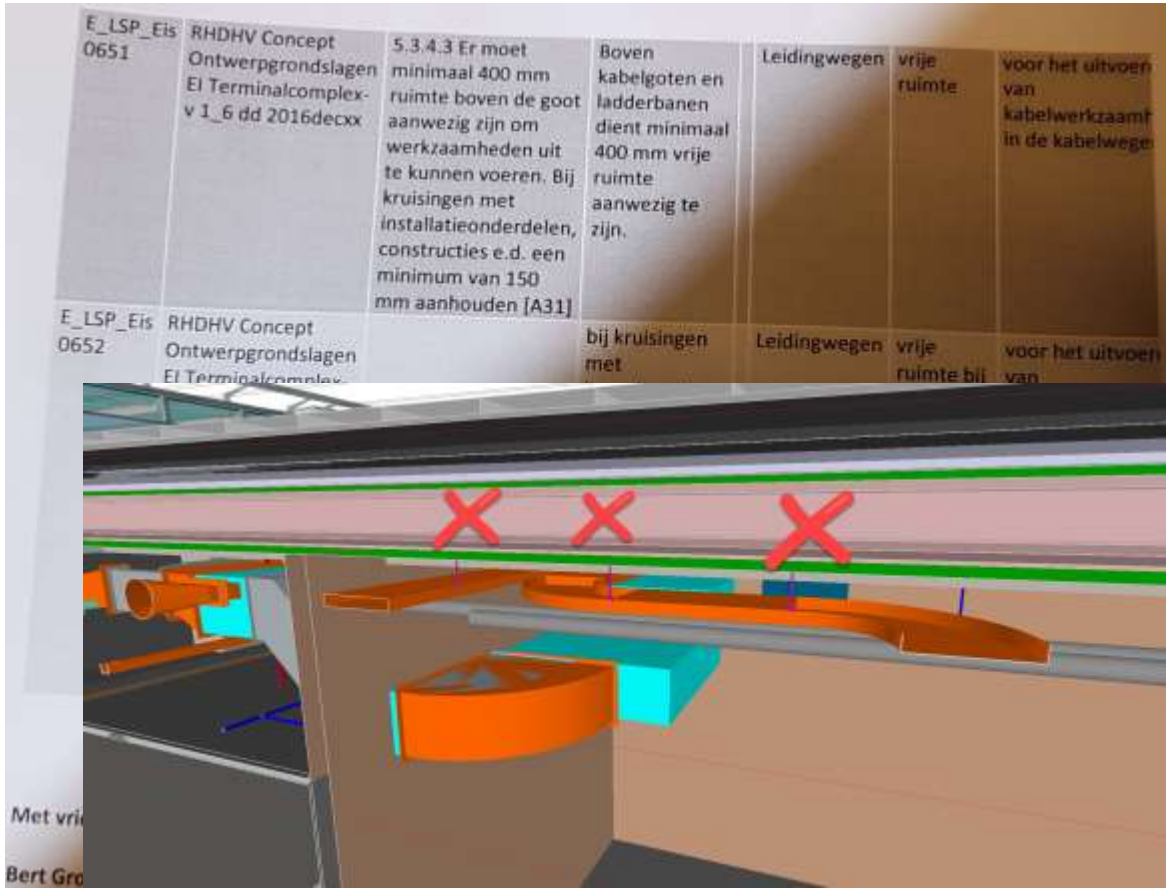
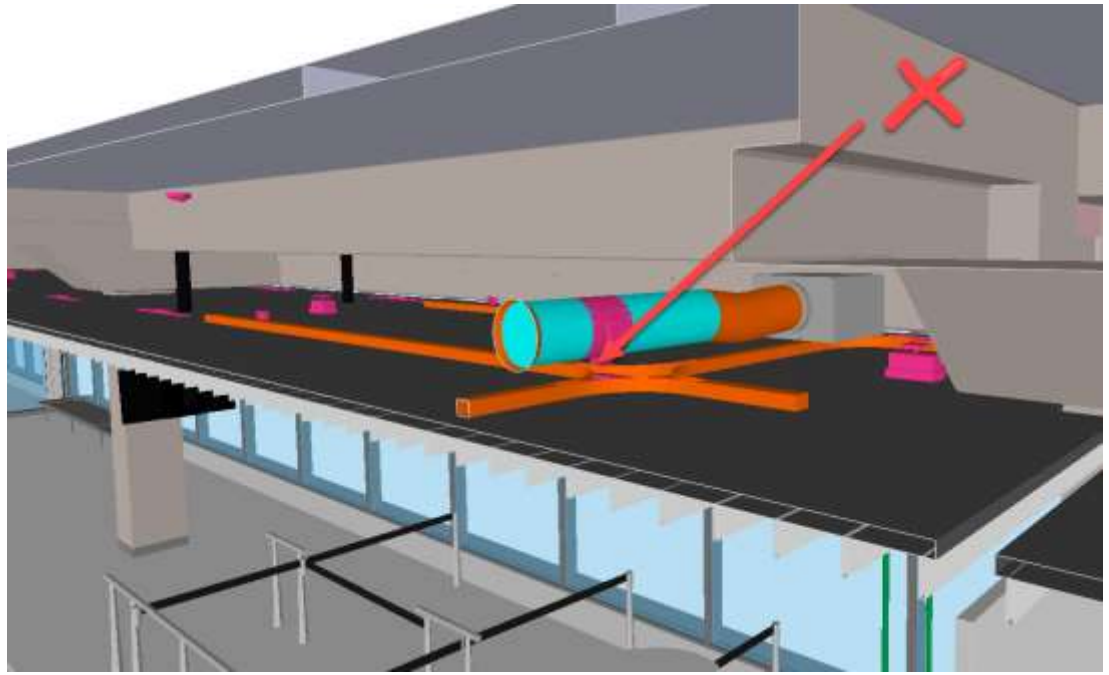
Automated checking

Ruleset for reviewers





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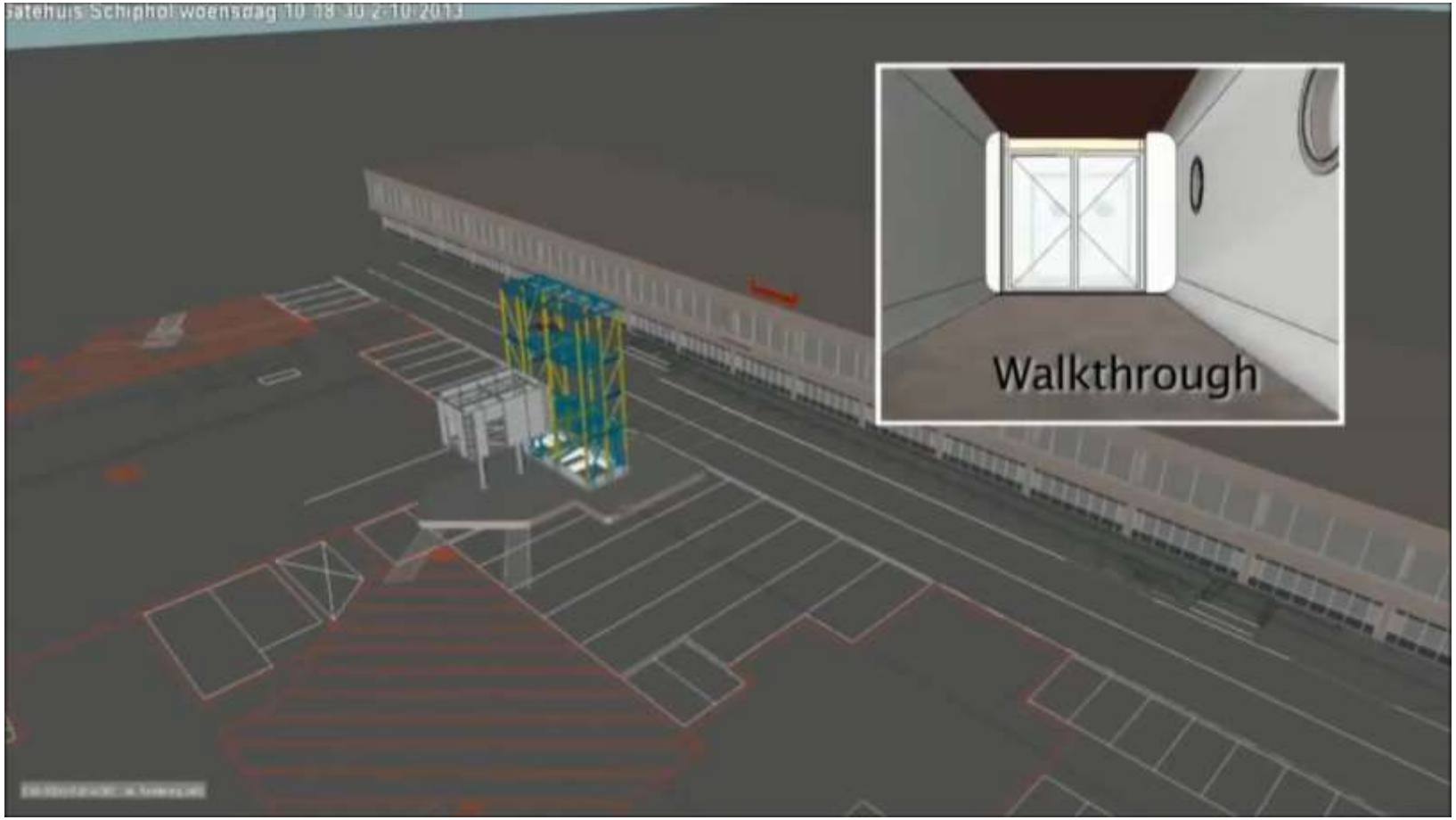
Visualization – Planning – Realisation



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Validation

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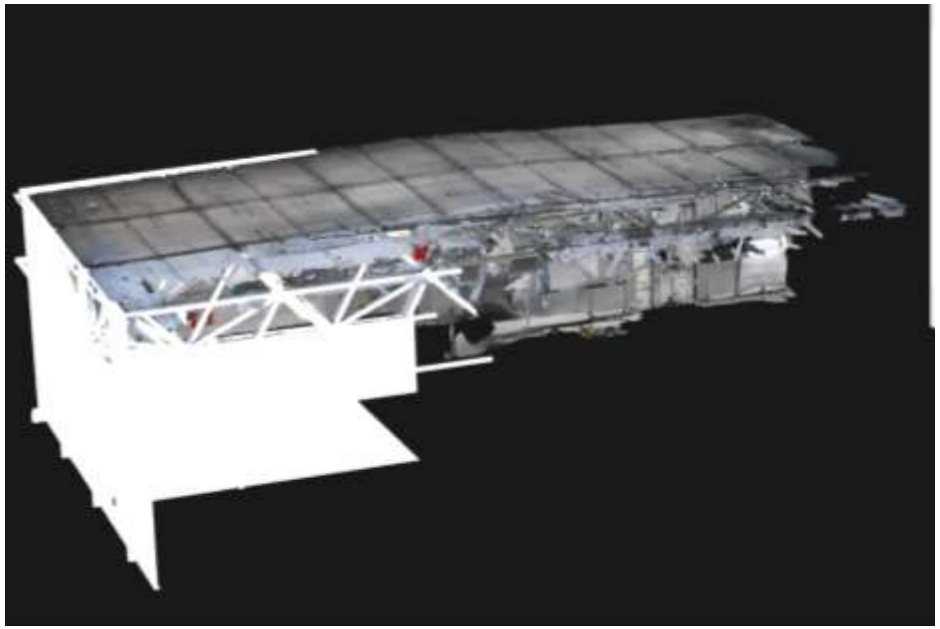
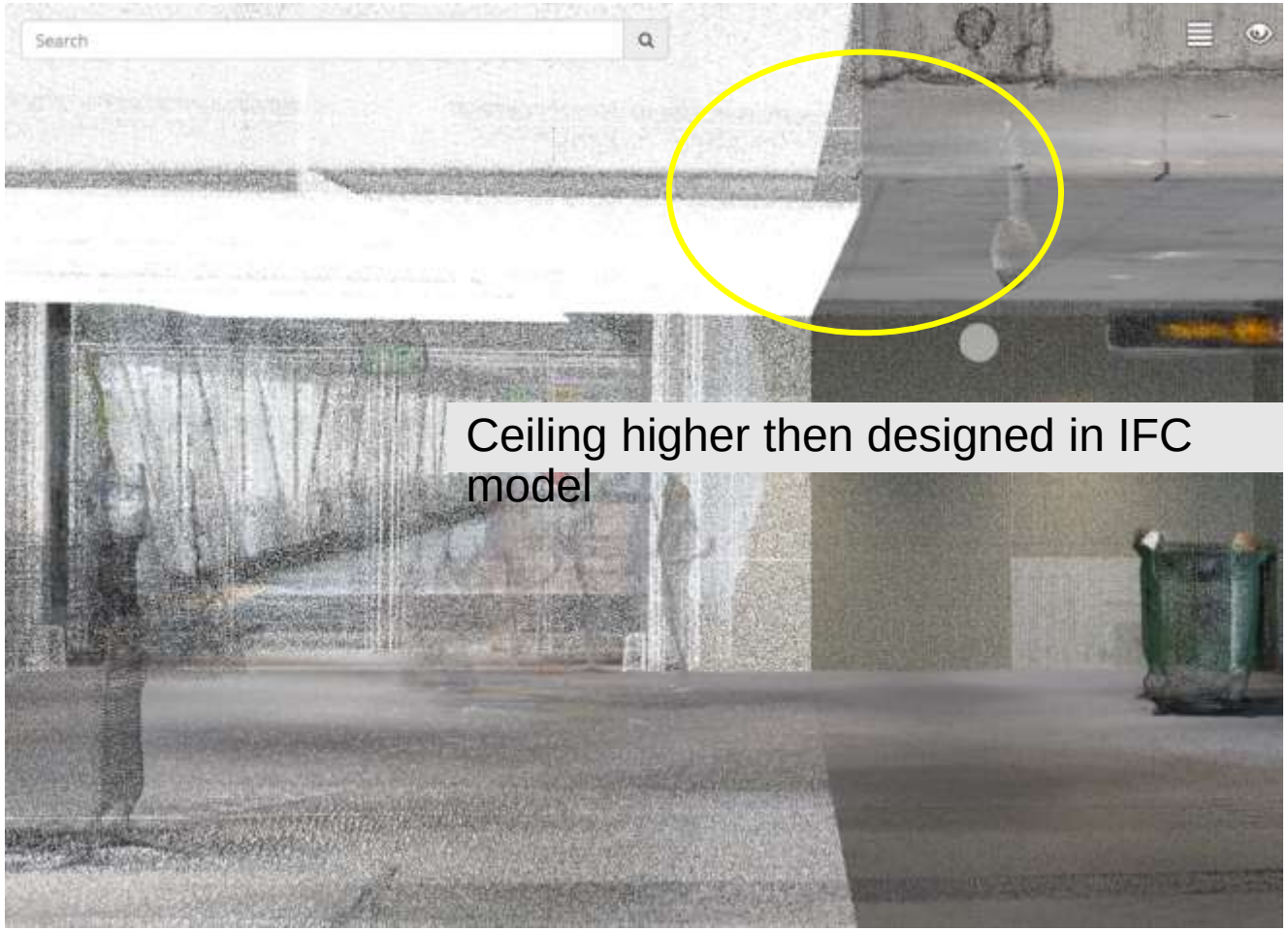
Validation As-Build vs Model





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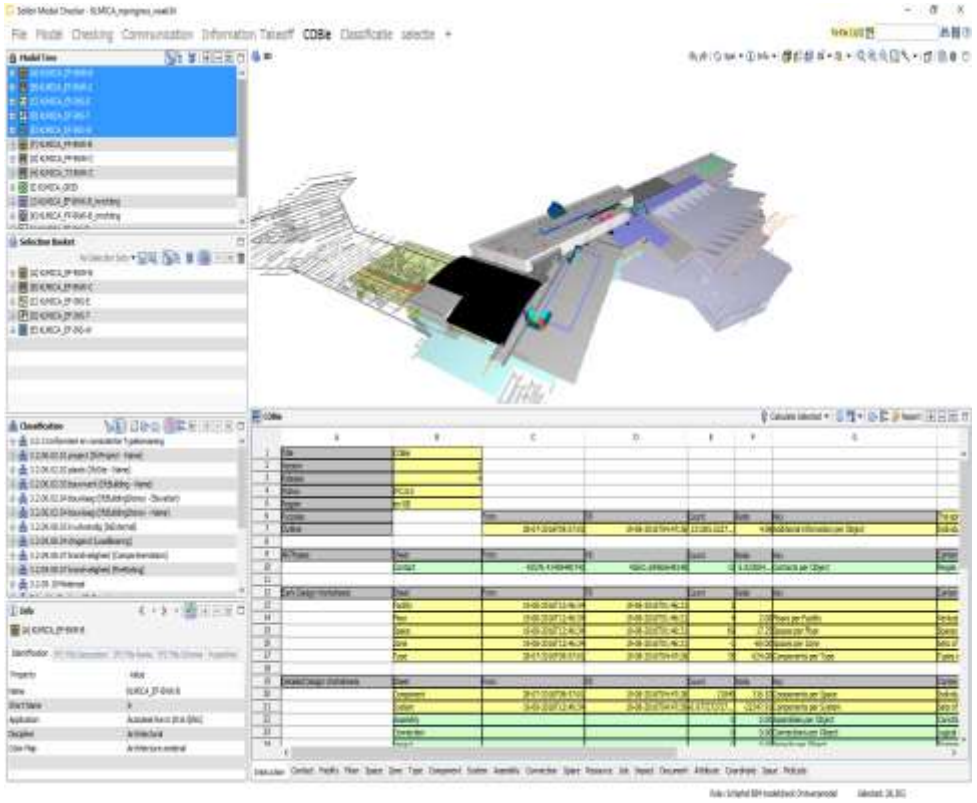
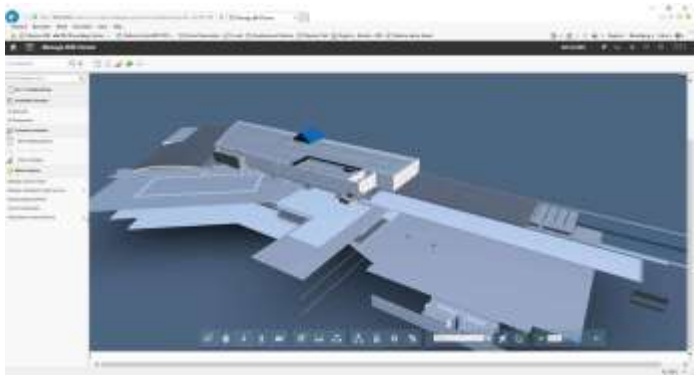
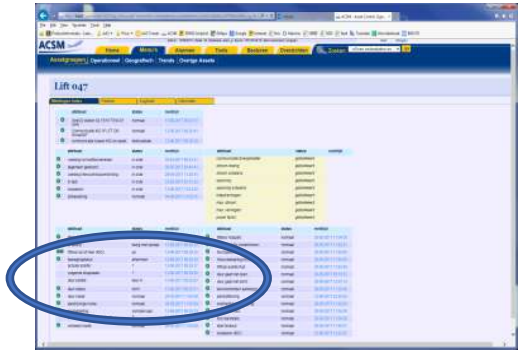
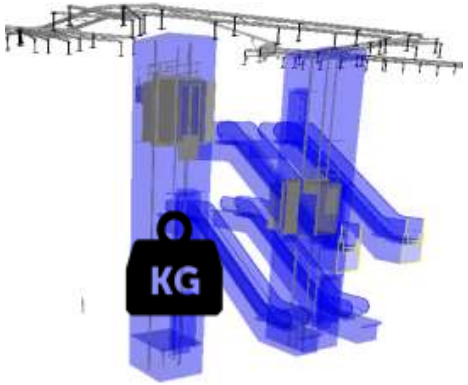
Validated (data)Information in FM-systems









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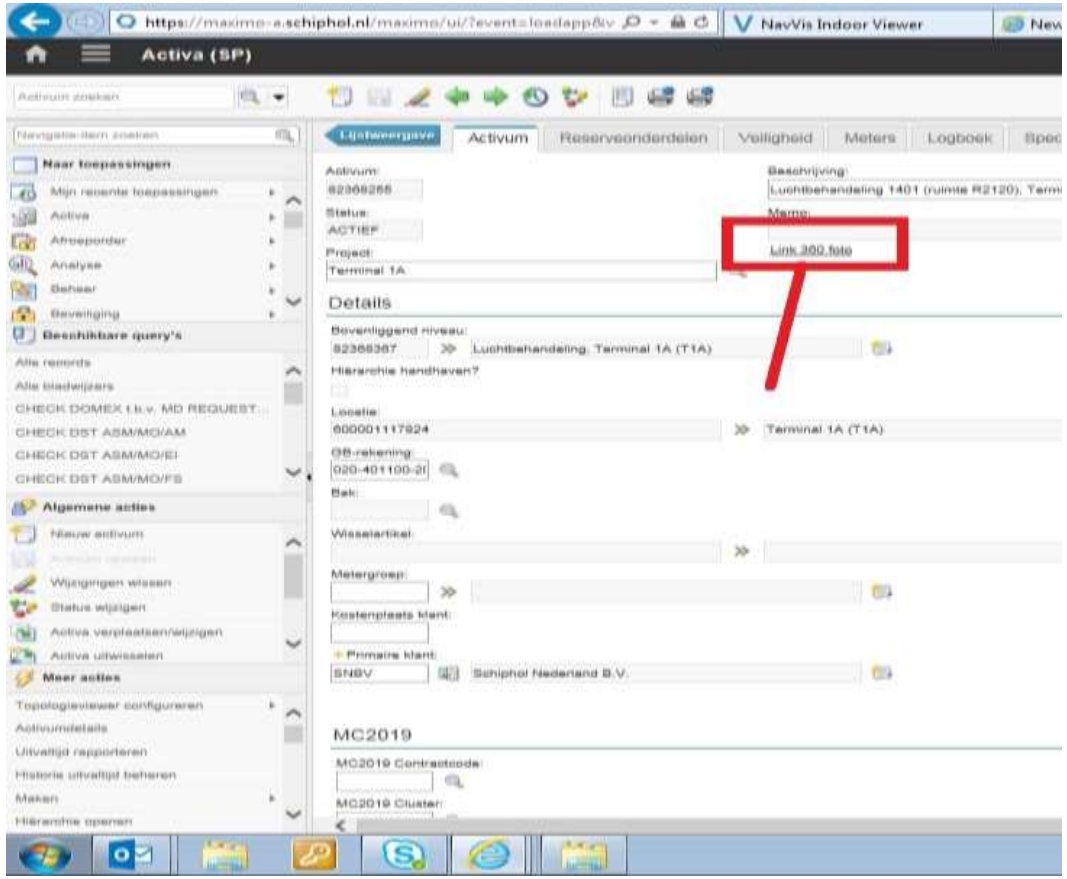
Integration FM-system with 360pointcloud



https://schiphol.4indoor.nl/#/?poi=7&fov=61.3

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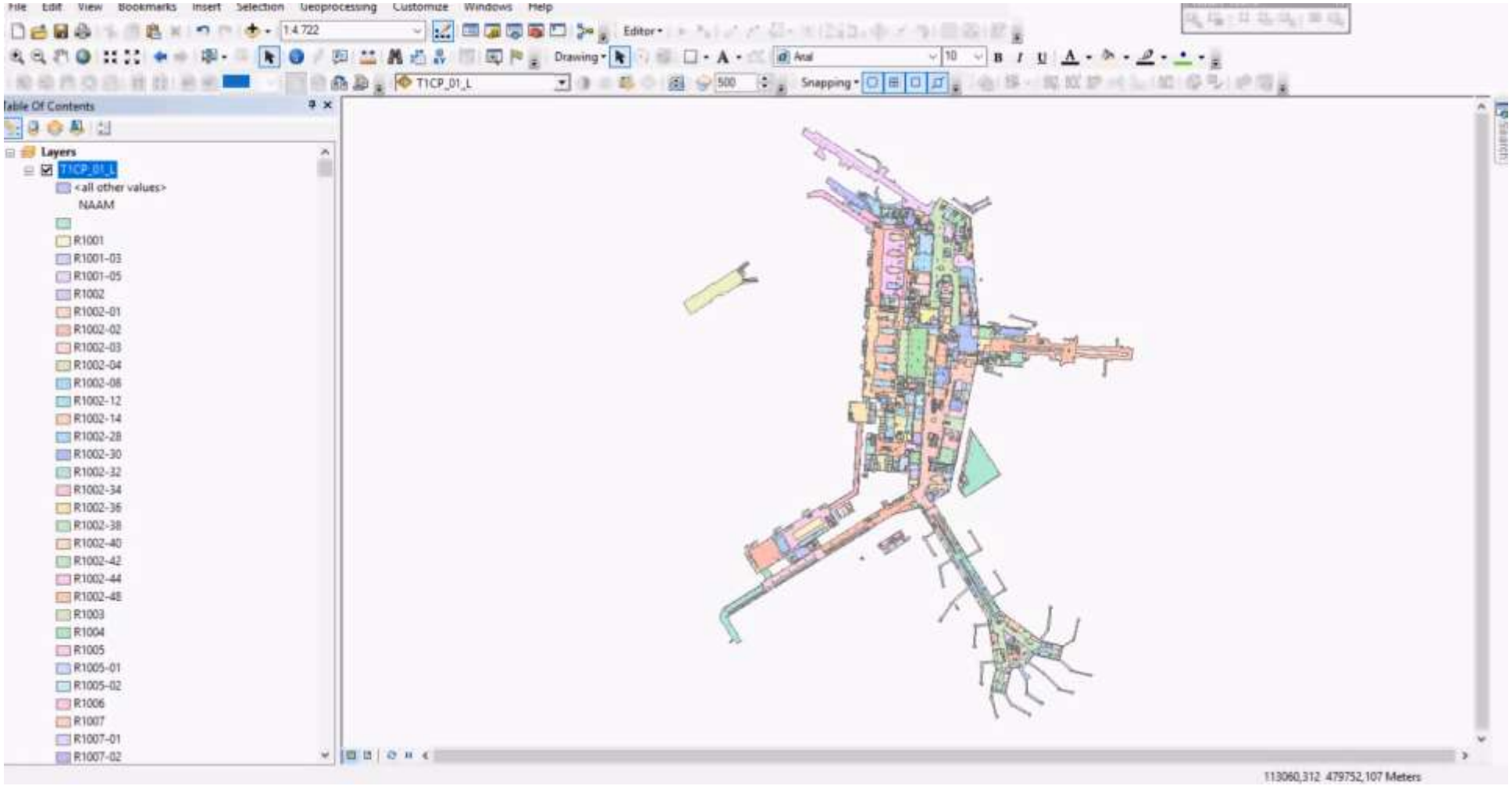
EAM system – GIS – Indoor Viewer



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SGIS APPLICATIONS

Case: **Bird App**

Goal: **Prevent birdstrikes**

Data Sources:

- **Bird Radar**
- **Dynamic planes positions**
- **Dynamic vehicles location**
- **Runway management**

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WILL YOU JOIN ?

The success of **BIM** is based on the **managed exchange** of **structured information** throughout an **asset's lifecycle.**

BIM for Asset Management;

'A process, including digital systems, where multiple parties collaborate unambiguous and share relevant information based on open standards, workflows and roles.'

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HOW

Coming together is a beginning
Keeping together is **progress**;
Working together is **SUCCESS**
Henry Ford

Schiphol

HOW

Employer's Information Requirements

ASM

Plain
Language
Questions

see **PAS 1192-2**

generates

Organizational
Information
Requirements

generates

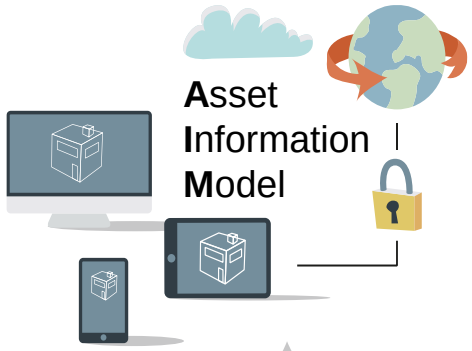
Asset
Information
Requirements

informs

Employer's
Information
Requirements

see **PAS 1192-2**

specifies



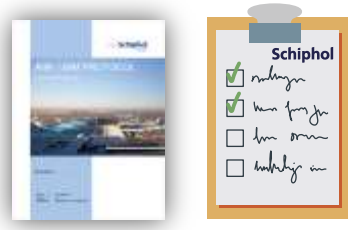
Asset
Information
Model

contributes to

specifies

Project
Information
Model

clear agreements
BIM-protocol



IDM

uniform data structure
Information Delivery Specifications

IFC

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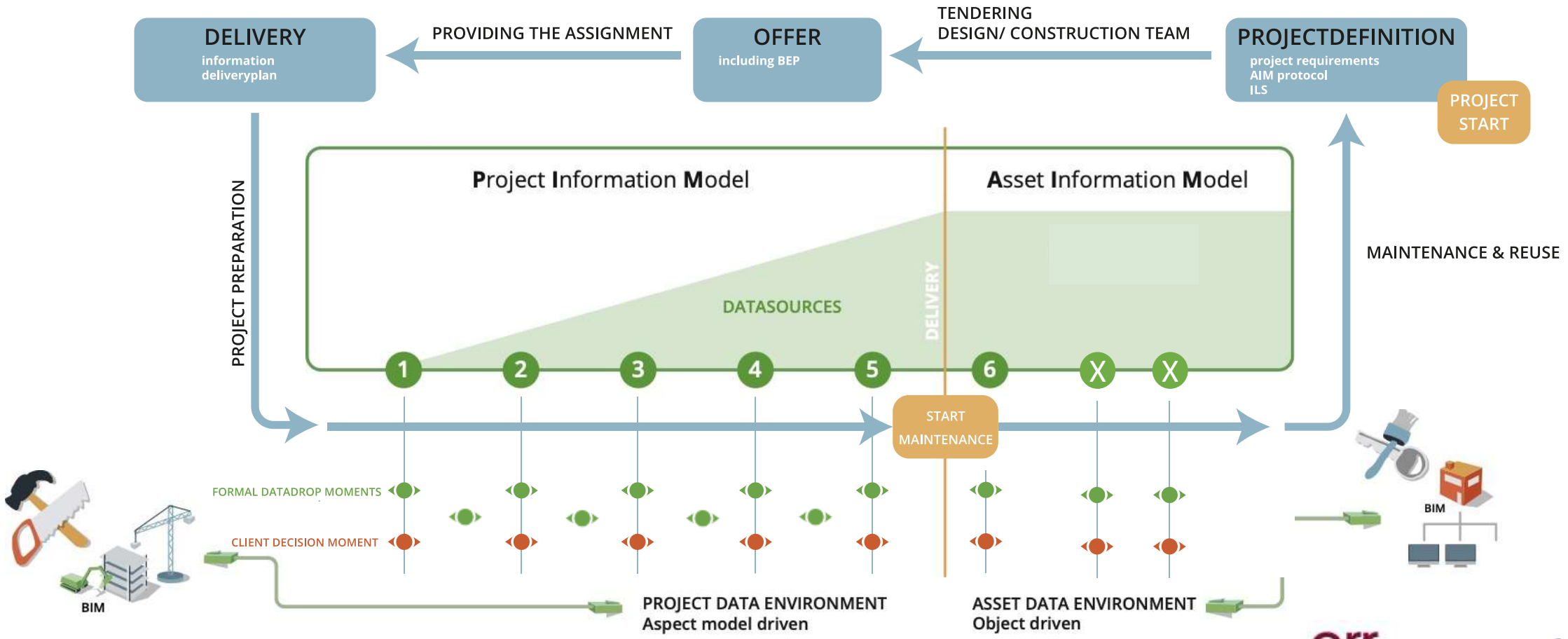
HOW

Information Delivery Cycles/Process



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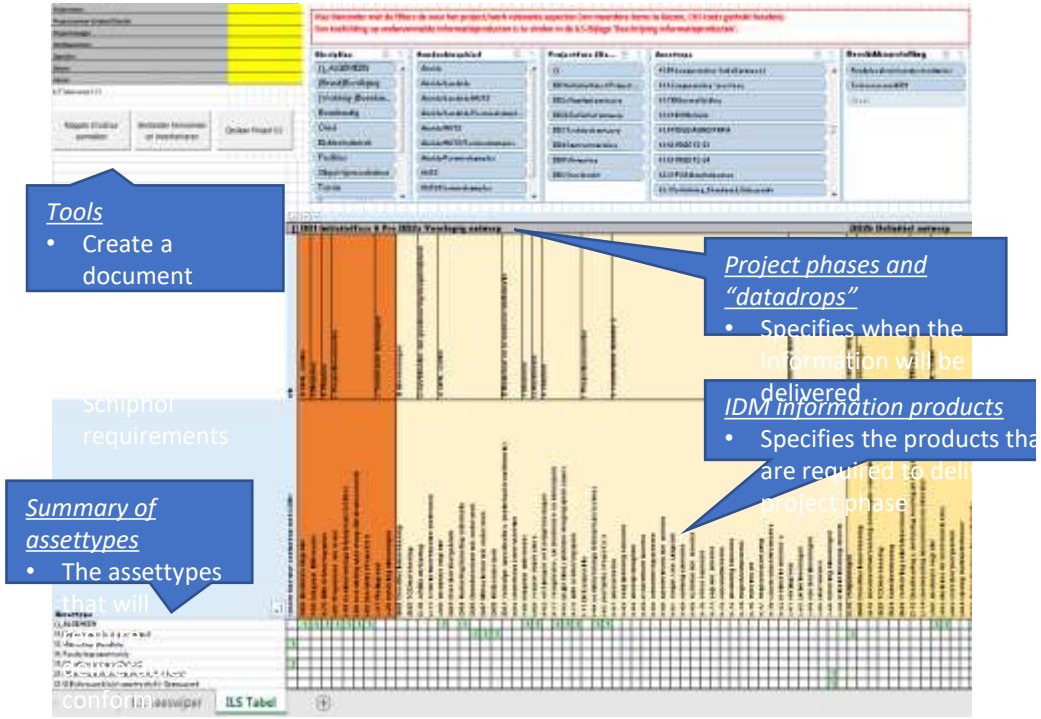
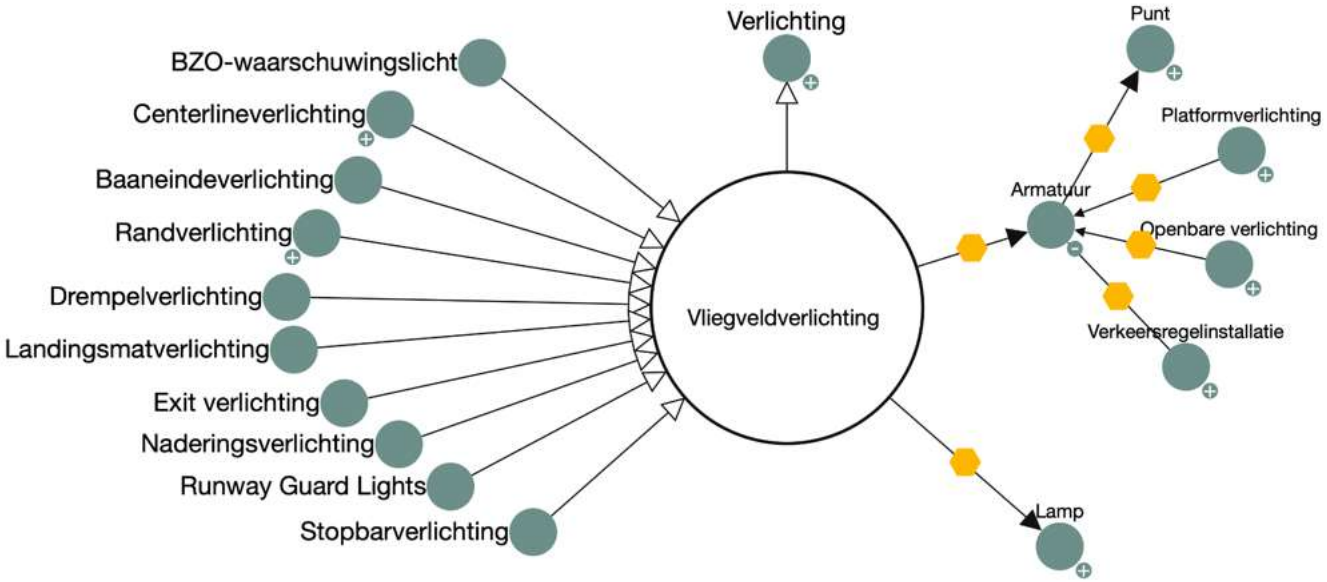
Employers Information Requirements

From excel to Object Type Library





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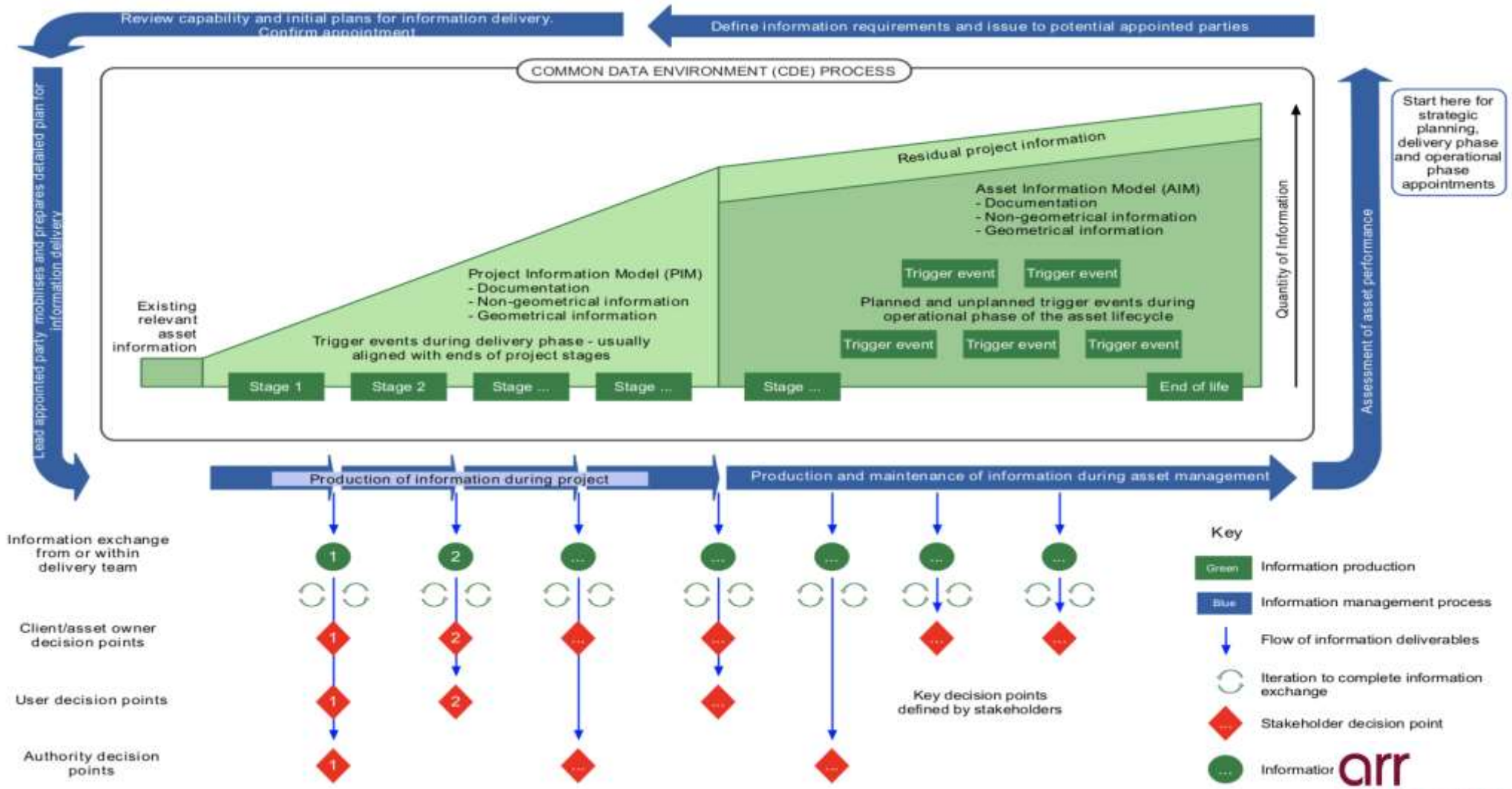
Align with ISO19650



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Collaborate

with all Stakeholders, through all phases and with Standardisation Organisations

buildingSMART International home of openBIM

OGC Making location count. www.opengeospatial.org

GEOSPATIAL media + communications

NL/SfB

BIM Loket

DigiDealGO Nationaal Digitaliseringsprogramma Gebouwde Omgeving

ISO

ISO

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TIPS

Use unambiguous agreements, uniform data structures and (most important) base them on **open standards**

Work together, with all stakeholders, through all the phases of the asset life cycle

to all learn and improve

Use automated Validation techniques on the delivered Information Models

based on the Employer’s Information Requirements

Explore more the usage of combining BIM and GIS applications

(beyond visualization – spatial analyses)

realizes that BIM and Geo Information must be combined and brought into relation to really add value.
I have taken the first steps, but continue to look for cooperation, to ultimately make the best choices for connecting GEO|Design+BIM.

arr worp Schiphol

WILL YOU JOIN ?

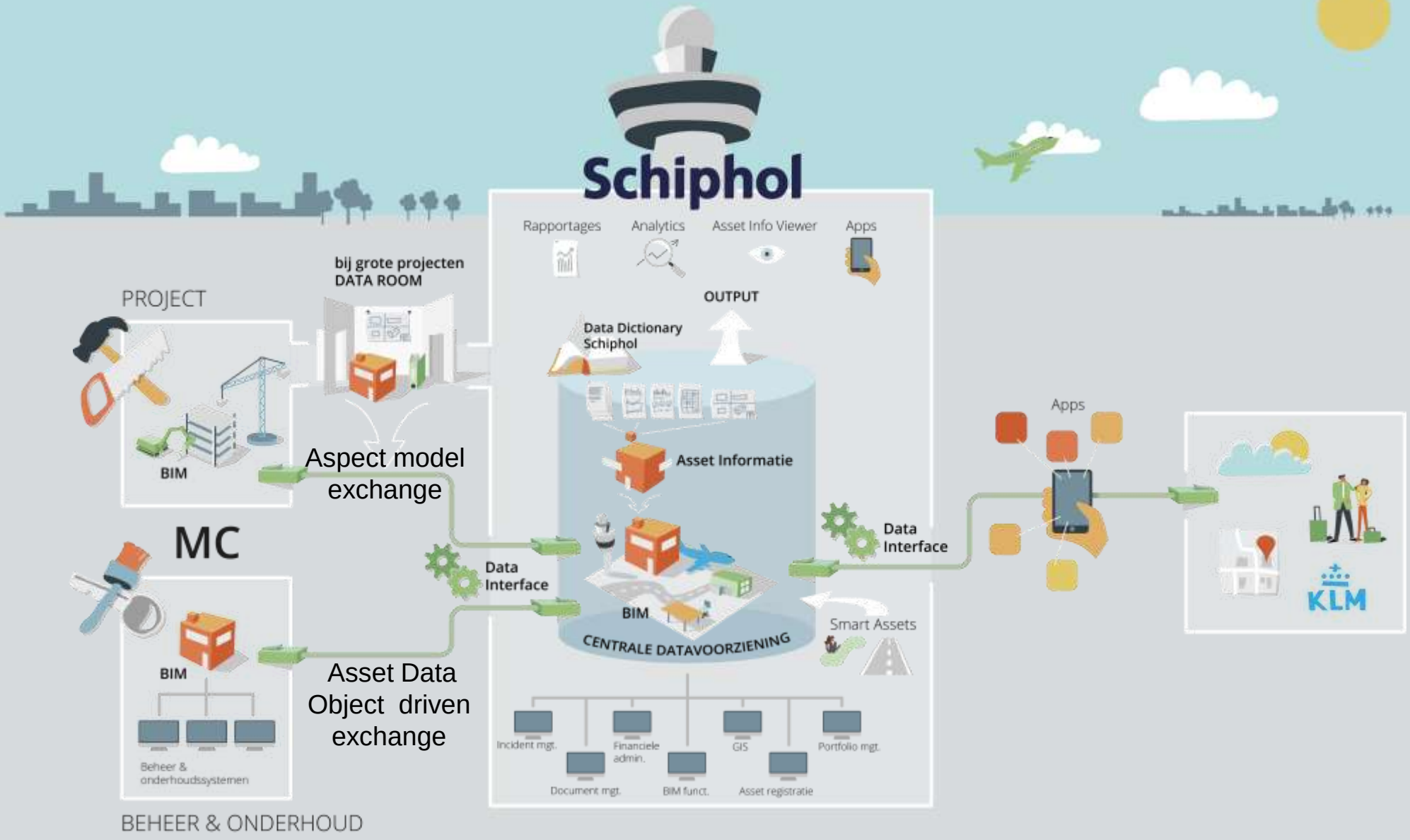
The success of **BIM** is based on the **managed exchange** of **structured information** throughout an **asset's lifecycle.**

BIM for Asset Management;

'A process, including digital systems, where multiple parties collaborate unambiguous and share relevant information based on open standards, workflows and roles.'

Schiphol

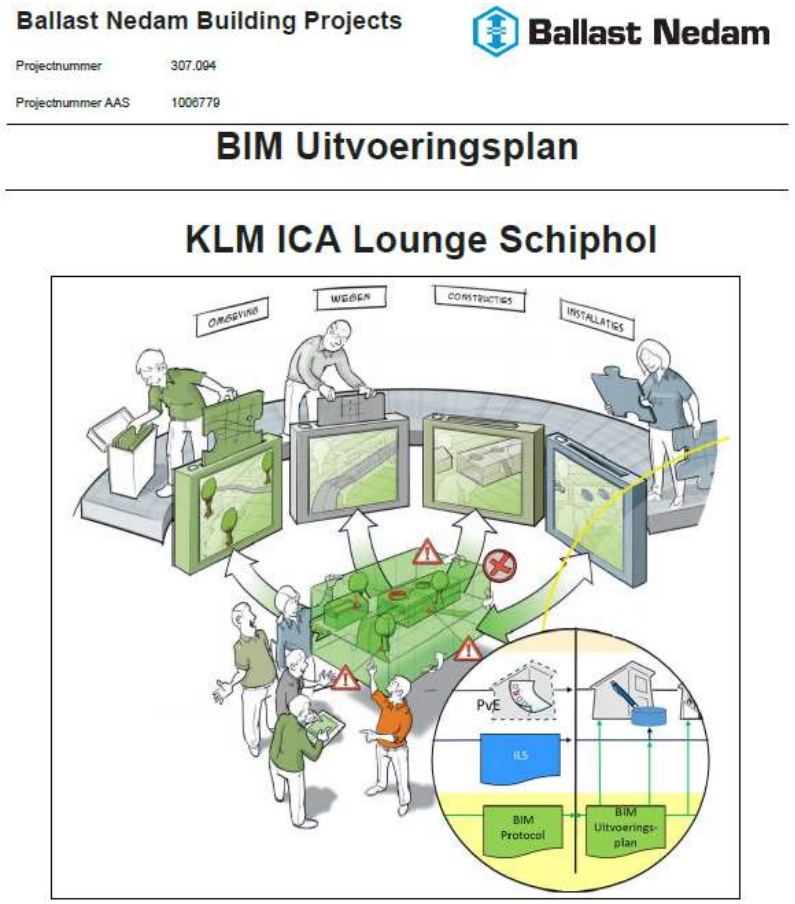
STRATEGIE INFORMATIEMANAGEMENT



Expansion Crown Lounge KLM

Design

Realization



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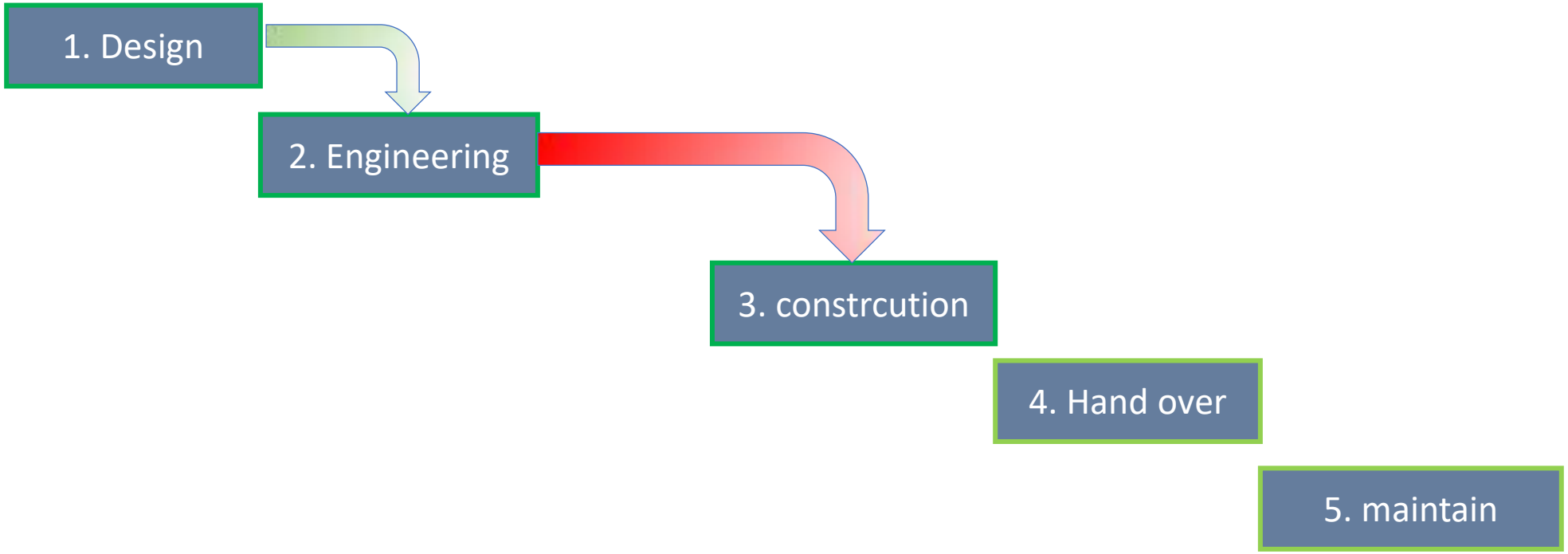
Expansion Crown Lounge KLM

Lessons Learned



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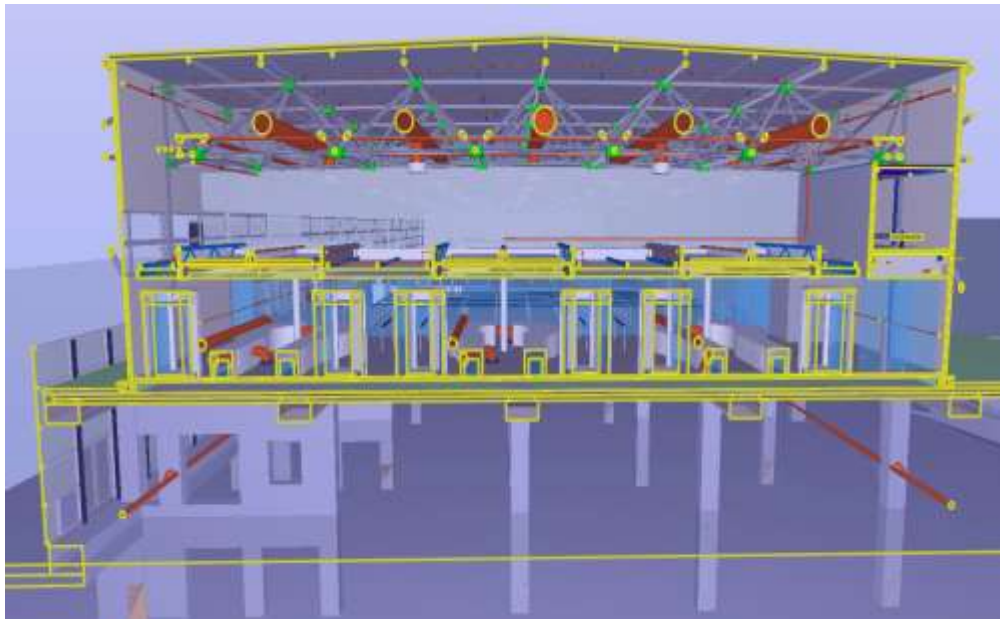
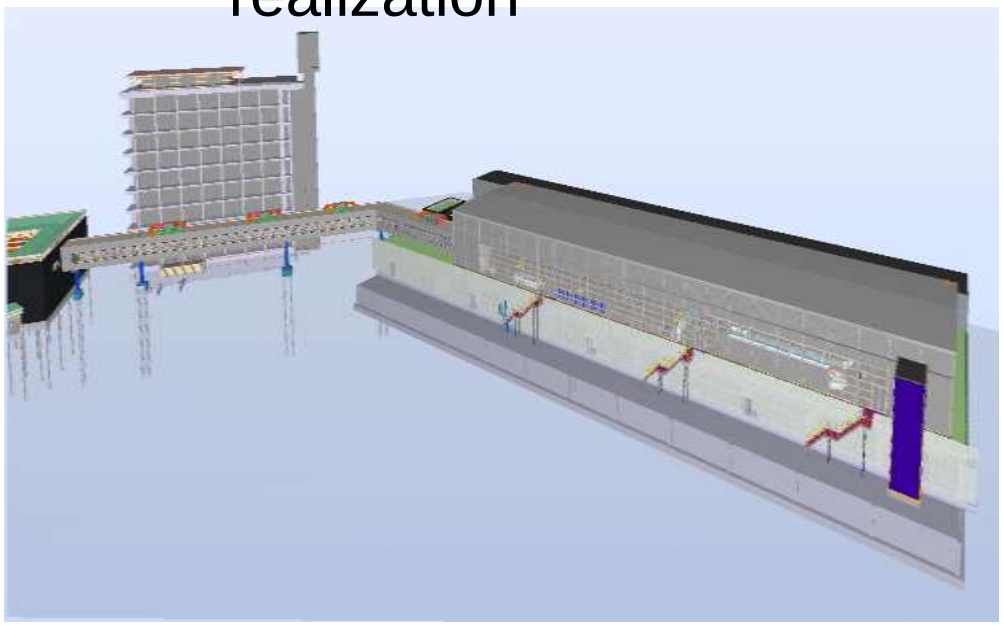
Departure Hall 1a; limited Time

2 months design



5 months realization



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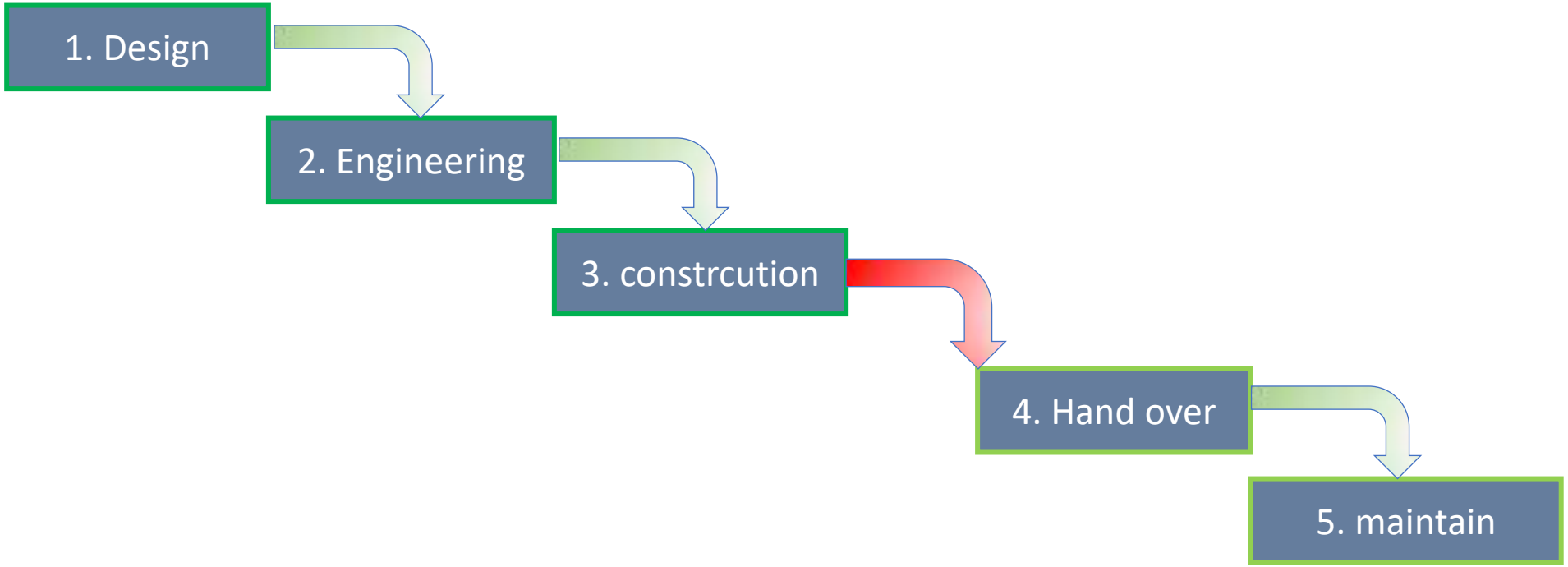
Departure Hall 1a

Lessons Learned



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Digitization of Asset Management

(B)IM:

Digitization/computerization of Asset Management with (large scale) exchange of information throughout the life cycle to optimize processes and decisions making

Virtualization:
Creating a digital copy of a physical object or process, supplementing or replacing processes and simulation. From BIM to 'Digital Twin'

Internet of Things:
the direct interaction between Digital, Virtual and physical reality.

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